

COCKPIT RESOURCE MANAGEMENT TRAINING

Chairman: Mike Yocum, Pennsylvania Airlines

Co-chairman: Clay Foushee, NASA

CAPT. YOCUM: Thank you, John. We found our working group yesterday to be an exciting challenge in resource management in itself. With the size of the group, it turned out that we had too many resources available, and initially that gave us some problems. After the opportunity for everyone to ventilate their ideas somewhat, we actually broke down into two groups and spent a good part of the afternoon researching specific tasks and objectives that we had identified before lunch. It was very interesting when we got together in mid-afternoon to compare notes that these two groups had independently identified a particular method of operation that was entirely different than the objectives that either group had set out to do. So it pretty well indicated to us that we had hit on the key issues. I'm very grateful to Clay for being such an expert at assimilating all of the notes and information that was gathered yesterday, and Clay worked until about 9:00 last evening putting all of this in word processing and attempting to put together a coherent report that I will now ask Clay to deliver.

DR. FOUSHEE: Our group faced an interesting resource management problem. Cockpit resource management is a multifaceted concept involving the effective coordination of many types of resources: aircraft systems, company, air traffic control, equipment, navigational aids, documents, manuals and the list could go on and on. However, the heart of the concept is basically how people function together in a group. I think the majority would agree that most resource management problems boil down to a lack of effective coordination or team work between crew members, or between crew members and flight attendants, dispatchers, air traffic control, or any other people in the system. Now, the reasons for these breakdowns are very often psychological in nature and sometimes from a basic lack of awareness. Humans sometimes don't communicate very effectively. Ego involvement or authoritarian interpersonal styles sometimes inhibit the input of other crew members. Ineffective communication can lead to such destructive circumstances as a breakdown in human relations, and an accompanying lack of openness or sharing of additional information. Increased stress as a result of ineffective task-sharing can result in increased workload downstream and ineffective decision-making.

Of all the major topic areas that our group considered, it all kept coming back to the human element. Now, clearly there are many other parts of the resource management puzzle that could be considered. Resource management certainly includes the management of the hardware in the system as well, but our committee was fundamentally concerned with how we could accomplish -- to borrow a phrase from Stan Fickes of U.S. Air -- "the most bang for your buck."

With this in mind, we felt it more important to concentrate upon the "liveware" or human element in a resource management training program to provide the most positive impact.

We believe very strongly that no resource management program will be effective unless the pilots who enter such a program are already technically qualified as well as emotionally and physically stable. Thus a major assumption of our proposal is that other aspects of a training or selection program must address those particular criteria independently.

The heart of our report deals with how the regional airline industry might implement a program of cockpit resource management designed to deal with human interaction problems in the most cost-effective manner. Our basic approach centers around creating an awareness, in all personnel undergoing such a program, of how subtle factors relating to one's interpersonal style can and do compromise, not only the flight crew interactional process, but all areas of human interaction within a company's operations. Creating this awareness, we believe, is critical to the success of any resource management training program.

We propose that there are three fundamental steps for any operator wishing to create a resource management training program. The first is problem identification; the second, orientation, or initial introduction of the key concepts; and the third we call the implementation or awareness phase. Now before I go into detail about each of these phases, I'd like to address for just a minute an issue that I'm sure concerns everyone here.

Our group was particularly concerned with the issue of limited resources, or as Martin Shearer from Air Midwest said on Wednesday, "I can do anything as long as it doesn't cost any money." So here we are caught in a bind of recommending a concentration on interpersonal or psychologically oriented management training, areas which would seem to require a great deal of outside expertise, and of course, that costs money. We're aware of the apparent paradox and feel that some outside involvement will be necessary for most operators, but we also felt that a great

deal of background work could be done without such assistance, with resources which are available to most companies. We'll elaborate on that as we present our three-phase plan.

The first phase or problem identification phase should begin with a company task force composed of management, training personnel and line pilots to identify what the most pressing issues are within a particular company. This workshop has served as a stimulus for those who have attended to take back information and begin such an exercise within their own companies. You have the raw materials needed. We suggest that a working group framework similar to the one in this Workshop is an excellent and effective method for generating a particular operator's list of priorities. This phase need not involve an outside consultant. The organization, itself, upon careful examination, can do a pretty good job of identifying the fundamental issues.

The second phase is that of orientation or the initial introduction of key concepts to the pilot group. This is the stage where the initial education occurs. Our group felt that a systematic introduction to the issue of cockpit resource management is essential before an actual training program can be implemented. Crew members should be thoroughly introduced to key concepts and encouraged to think about the issue before being placed in a classroom setting. Again, there are a number of resources available to an organization interested in conducting such an orientation program. We suggest that operators take full advantage of such resources as the ASRS database, National Transportation Safety Board Accident Reports, airline incident reports, NASA technical publications, articles in trade publications, and from organizations such as Flight Safety Foundation. Tape-slide and video-tape presentations can be developed and exchanged among member companies. We've seen some excellent examples of this type of work among Regional Airline Association members during the course of this Workshop. For the most part, such information is free, and most, if not all, of the work can be done without the involvement of outside consultants.

The last and most difficult phase, of course, is what we call the implementation phase. This is the area where professional expertise might be required. We felt that any program should include a great deal of work with the role of interpersonal factors in the resource management process. Obviously familiarization with such concepts as the grid, the self-esteem model or any other means of introducing a common language or model of the group interactional process is essential if we're to provide the raw materials which are necessary to create the awareness that we feel is so

important. These raw materials should be provided in a form that is directly translatable to aircraft management and company operations. Thus, the selection of outside experts should consider the consultant's familiarity with such issues. At the very least, companies should provide consultants with some sort of familiarization with aircraft operations. However, this is only part of the process. The concepts are only the raw materials. Individuals undergoing such programs must actually experience directly or have an opportunity to gain firsthand knowledge of small group interaction phenomena if these programs are to produce tangible attitude and behavior changes. Thus, we feel that a resource management training program must provide some means of self-assessment or feedback to an individual about how he or she functions in a group environment.

We believe that the most effective means of providing this feedback is the system utilized by United Airlines where flight crew members view themselves flying a full mission simulated flight. This type of video tape feedback produces objective self-awareness or the opportunity to view one's self from a completely detached perspective, and this type of self-awareness is the most effective known method of producing significant attitude and behavior changes.

Once a program is in place, some means of reinforcement is necessary. "One-shot" seminars stand less of a chance of producing long-lasting results. Thus, it is suggested that recurrent training periodically reintroduce personnel to methods and techniques established during the implementation phase.

We have attempted to present an outline which provides a general framework and summarizes what we feel to be the most important parts of the process and what we feel should be the underlying philosophy for a resource management program developed by each individual operator. However, we felt that there are other alternatives for providing effective cockpit resource management training. We felt that RAA members could capitalize on the expertise and trial and error experience of the large carriers who have implemented cockpit resource management training. We should not get hung up on the "not-invented-here syndrome."

Perhaps the most cost-effective method of providing this training would be accomplished through a pooling of resources among member airlines to create a query program that could be used in whole or in part by a broad spectrum of the member companies. Under the leadership of the RAA, a task force of RAA members could be created to produce such a program, to tailor an already existing program, or at least to help create the raw materials which could be shared among member companies. The RAA might serve as a clearing house

for professional expertise or it might consider negotiating with major airlines for access to appropriate parts of the already existing programs.

Clearly, a preexisting program will not be entirely appropriate or feasible for the average regional airline, just as one single program will not be completely appropriate for all of the regional operators. However, the nucleus of such a program might be provided under such an arrangement, and we feel that this option should be pursued.

In closing, our group would like to emphasize that such an effort cannot possibly succeed unless each operator sits down and takes a systematic look at what will work and what will not work for their specific operation. In this way, they will be in an excellent position to acquire the materials and to get the most "bang for their buck."

DR. LAUBER: Thank you, Mike and Clay. That was an excellent way to start off the morning. At this point let's open the floor to questions and points of discussion with regard to Working Group I's report.

A VOICE: Are you mailing out copies of these reports?

DR. LAUBER: Let me explain the process from here. As you know, we're creating a transcript of the proceedings. We'll use that to draft a preliminary version of the conference proceedings. I will distribute the draft report to each of the industry and NASA chairmen as well as each of the speakers on the formal program for their comments and then we'll get those comments back and incorporate those into the final draft of the report. Ideally we'd send it out to each of you and offer each of you a chance to comment, but clearly that is not feasible. But we do want an opportunity for additional input, further input and editing opportunity by each of the working groups and each of the speakers. So that will be the procedure, and it will take some time to get the report out, but bear with us. We'll do it as quickly as we can.

Do we have any questions or points of discussion?

MR. STEPHEN: Alan Stephen, Regional Airline Association. You assumed a very big opening step which is that the pilot is properly qualified, mentally and physically fit. How important is that, and is that absolutely critical? And obviously there's a qualification process already in place for every airline, but what did you look at separately, or how important is that? Do we need to standardize that before we can go on to the next step?

CAPT. YOCUM: Alan, we considered the basic

qualification to be fundamental to any resource management program, and almost taken for granted, if you will.

DR. FOUSHEE: I might also add that there were discussions dealing with pilot qualification and training in the other groups. They were more directly charged with handling those types of issues. Our major assumption was that, while there may be other parts of the training process that need improvement as well, in order for a resource management training program to really do a very good job, you needed to start with a technically competent and stable pilot. We were not purposely ignoring this area, we hoped it would be dealt with by the other working groups.

MR. PLATT: Russ Platt from Midstate. Did you feel there was any particular group from an airline that you would want to start with first, or did you just want to take a random selection of everybody? I guess today or the day before, Piedmont said that they just went with upgrading captains or captains only or a general mix?

CAPT. YOCUM: As a group, we didn't really address that specific issue. The general feeling that I'm interpreting from the discussion that went on was that we need to provide resource management to all pilots. The basis on which I say that is perhaps the example where we have had accidents where the captain has been the one that's missing the ingredient and the first officer does not advocate his position clearly. Did he have training to provide that insight that he must advocate his position when he perceives the captain as being in error?

MR. BEAUDETTE: Dan Beaudette from the FAA. Please don't let me put words in your mouth, but I think if you would iterate a little bit more on Step 1 of your recommendations it would be more help to each individual company. It may be different for each company to determine what the problem is and where you'd start, and I think from listening to your group that you covered that in Step 1 in making recommendations for each company to get started as to how they want to do this.

CAPT. YOCUM: Yes. The basic awareness program we felt in itself would accomplish a lot towards enhancing resource management in the cockpit.

DR. FOUSHEE: We felt that it was critical that the very first step would be the establishment of a company task force, an appropriate cross-section of the company, which would sit down and actually look at what their specific problems are. This RAA group represents a wide variety of different types of operations, and the problems are not going to be the same for each operation. We felt that it

was critical that each operator identify their needs in great detail. We suggested that the working group framework is an excellent way to accomplish this sort of thing, and that the individuals who have participated in this workshop can take the raw materials that they've been exposed to at this workshop and establish such a task force or working group with their own company. We felt that this process would be the best way to identify significant operational issues within each individual airline.

MR. COLLIE: Dick Collie from the Regional Airline Association. Can you elaborate for the people who were not in your working group what would be the composition of that initial group? I think that is basically what the question was, also, the initial composition of the group within the airline to get this rolling. The mix of management and maybe line pilots, check pilots, just what you perceived as the mix of that group.

DR. FOUSHEE: Do you want to respond to that, Mike?

CAPT. YOCUM: The group felt that a good cross section with a high composition of grass roots line people involved would be the best mix, with enough management people and line check airmen just to keep the program organized and moving. Most of the input being created by the line people would give that sense of involvement on their part, and enhance the enthusiasm and receptiveness of the line pilot body for the program.

DR. FOUSHEE: I think the important thing is to get all perspectives represented within the group.

DR. LAUBER: Do any of the people from Piedmont or U.S. Air or United want to comment on either of those questions, the question of the composition of the initial task force or group within the airline? Does anyone want to offer a comment on that? Stan Fickes.

CAPT. FICKES: First of all, I'd like to compliment you on what you've accomplished. It's really exciting to see how in just three days you're developing a program here, and I know it will move forward. One or two suggestions I might have, I think that it's important to get back with your check airmen and identify the problems that exist. They're much more aware of it than the line personnel. I would recommend that you have a strong foundation, discuss the problems with them, your solutions, your thoughts and so forth before you go to management. If you do that, I think you'll have a lot less problems selling your program, and I think you'll get a lot more support. Thank you.

DR. LAUBER: Thank you, Stan.

MR. BECHER: Ken Becher with Midstate Airlines. How important is having a total program set up before you start the introduction? In other words, can you start introducing people to material before you've got the rest of the program designed, or should everything be totally designed so that the perception isn't that you're introducing something and not carrying through with it?

CAPT. YOCUM: This may not be the right answer, but I'll answer that from personal experience with Pennsylvania Airlines. We embarked on a program of awareness without having any formal program totally intact. We've been following our nose, so to speak, as to where to go in the development of the program, and getting more people involved from the line, and the check airmen, as Stan pointed out, are very much a part of this process. To develop the program and then present it to your people lacks what I feel to be the initial and very necessary ingredient of involvement of the people that it's going to be for. So in answer to your question, my personal opinion would be don't hesitate to launch an initial awareness program, at least, and then have some self-assessment from that point as to where do we go from here, what do we as an airline need. And that seemed to be pretty much the sentiments of our working group yesterday as well, for the method of initial implementation.

DR. LAUBER: Ed Carroll had a comment.

CAPT. CARROLL: I'd like to add to what Stan said and expand upon it just a little bit. First of all, I'm more than amazed that you can put together such a comprehensive expression of a report in such a short period of time. A word processor notwithstanding, it took a lot of effort in order to put that down in the form in which you did, so I think you ought to be complimented for the all-encompassing approach that you took and the expression you made of your deliberations.

As Stan pointed out, your airlines are probably no different in this respect from the standpoint of hierarchy than the bigger one, but you also have, I think, a small enough population where you probably don't have near the problem we did in educating a group of people to the awareness of this situation. But commitment of top management and their awareness either has to be done first or certainly in very close parallel to the outline that you've expressed here, the awareness for the population and the input from the users, if you will. If you had commitment from top management, and that's probably a little bit easier to get, you'll have strength for the program, and it was very important to us that our pilots recognized that there was a continuing management support of the program, so

much so that they asked for management involvement in the actual implementation of the program, the personnel to be used. But I would echo-- I was going to make a comment a little broader, but what you just responded to, Mike, in the previous question I think is extremely important. The users must be in on the ground floor of the development of the material, because this is a new approach that you're going to take. They're used to technical training, but they're not used to this kind of approach, and they had best understand from the very beginning that it is a support expression on your part to try and create an even more professional atmosphere than you had before. I would just encourage that you go up front with the fact that this is not an evaluative program, but a supportive training tool, and make sure that when you do get to any implementation questions, that grading forms, assessment forms or evaluations or any words of that type, are eliminated from your vocabulary as you approach the development of the program.

DR. LAUBER: Thank you, Ed.

DR. BENTHAM: Jack Bentham from Metro Airlines. I'm responding to the question over here about a developmental plan for your cockpit resource management. What we did at Metro to prepare upper level management for budgetary requirements is to present to them a three-year strategic developmental plan, and included in that was the cost effectiveness of the program, specific items as to the pay-back and return on investment issues for the executives. It also began to show them how the pilot involvement would occur, and what would be the ultimate pay-back as far as cost efficiencies as far as reduction of fuel costs, savings from maintenance costs by teaching the pilots to be key decision-makers, to be executive managers. So one of the suggestions that I would throw out for consideration is the actual preparation of the three- to four-year strategy development plan to include budgetary requirements, to include an education process of the upper level management, to include the board of directors, if you have access to them, to include the pilot association, to include a steering committee that is composed of your pilots, of your upper level management, of ALPA, of other people that might be in this particular process. And by developing this three-year plan, you've actually prepared for budgetary considerations in the second year and the third year. And you might find that the biggest bang for your buck may be that in planning this developmental program, you may end up with more bucks for your particular program. So I just throw that out as a consideration.

DR. LAUBER: Okay. Thank you. Any others? I, like Ed Carroll, was amazed of the quality and detail and quantity

of the report. It was clear that somebody worked hard and long yesterday. Thank you very much, gentlemen.

With that, we'll turn the floor over to Working Group II which dealt with the issues of simulation and flight crew training. The industry chairman for that is Frank Foster from Ransome Airlines and Bob Randle from NASA is the co-chairman of that group.